a fine example of how rewarding collaborative multidisciplinary research can be.

The 41 chapters can be broadly grouped under 4 main headings: the reduction intermediates of oxygen; the distribution and characterisation of the different superoxide dismutases; the superoxide dismutaselike activity of copper chelates; and finally a selection of papers dealing with active oxygens in plant biochemistry. The section describing the superoxide dismutases, their metal binding and protein structures is by far the largest section in the book accounting for some 19 separate chapters.

Presentations are a mixture of short reviews, communications of new experimental data and summaries of published work. Many of the figures and diagrams are less than inspiring with photographs generally reproducing poorly with the type of printing used. However, the book has without doubt been skilfully edited and interestingly presented. In such a rapidly developing field of research it provides an invaluable source of up-to-date information for those working with superoxide dismutase, its radical substrate and related areas of interest.

J. M. C. Gutteridge

Principles of Gene Manipulation: An Introduction to Genetic Engineering

Studies in Microbiology: Volume 2

by R. W. Old and S. B. Primrose
Blackwell Scientific; Boston, London, 1980
x + 138 pages. £5.00 (paperback); £10.00 (cloth)

There is no need to stress the importance of a book on genetic engineering: the spectacular progress in the past few years and the practical exploitation of the results put this modern line of biological research into the forefront of interest. Scientists who are not themselves engaged in this kind of research still want to know about new developments. Biologists working on a variety of research problems find new applications of cloning techniques. The number of papers published on this subject is enormous and most papers are highly specialised, it is thus very difficult to keep pace with the literature.

A good introduction to the methodology, which gives a clear picture on the different approaches used to solve different problems, and which enables the reader to follow the more specialised papers, is therefore very welcome. This is exactly what Old and Primrose have provided in their book 'Principles of Gene Manipulation'. It is not the only book on this subject, but it is probably the best. It is concise, lucidly written, and well organised. The use of clear and informative diagrams make for a better understanding of the sometimes rather complex procedures in gene manipulation. The authors aim at explaining the principles rather than the technical details, but they keep good balance in describing the general and the particular problems: each method is illustrated by by examples taken from the literature and described in some detail. This makes very interesting reading and gives a clear idea of the advantages and difficulties involved in the use of different approaches.

The book is based on a series of lectures given to undergraduates at the University of Warwick. It is a very suitable textbook for advanced undergraduate and postgraduate students and it is also a very good guide for scientists to this extremely popular modern field of biology. The book covers many aspects of gene manipulation, it contains an amazing amount of information in a small volume. After a short introduction, the enzyme reactions are described which are involved in cutting and joining DNA molecules. The next chapters deal with the properties of different cloning vehicles (I enjoyed reading the interesting chapter on the construction of different plasmids); with the choice of the appropriate strategies for cloning different DNAs; and with the selection and characterisation of recombinants. A chapter on the expression of cloned genes follows, and the special

problems of cloning in mammalian cells and in plant cells are discussed.

The literature has been surveyed up to mid-1979 and a few more recent papers and methods are briefly discussed in an Appendix. About 160 references are listed, which seems a rather limited selection. I cannot agree with the authors' intention to choose 'examples from the literature which . . . best illustrate particular topics'. This may be what students are looking for, but scientists who read this book would have benefitted from a more comprehensive coverage of the literature. I would have liked to se more references to papers which describe experimental details not included in the text.

In a field where progress is very fast, books often date rather quickly. I do not think that will happen to the work of Old and Primrose. By putting the emphasis on the principles which form the basis of present research as well as of future developments, they have written a book which will be read with interest also in coming years.

M. Szekely

Genetics and Evolution of RNA Polymerase, tRNA and Ribosomes

Edited by S. Osawa, H. Ozeki, H. Uchida and T. Yura
University of Tokyo Press, Tokyo; Elsevier/North-Holland, Amsterdam, New York, 1980
vi + 670 pages. Dfl 236.00, $115.00

This book is the proceedings of the Oji International Seminar on 'Genetic and Evolutionary Aspects of Transcriptional and Translational Apparatus', held in Tomakomai, Japan, in September 1979. The 42 papers come under 4 main headings: RNA polymerase; transfer RNA; Ribosomes; and Molecular evolution. Of the numerous aspects of transcription and translation the emphasis in these proceedings is on organization and control of expression of genes for the individual components of the two machineries with a sprinkling of papers on structural aspects, including post-transcriptional and translational modifications. In this context it is particularly fitting that the evolutionary aspects of the basic functions of transcription and translation, indispensable to all living organisms, occupy ~25% of the book. Thus several papers in the section on molecular evolution illustrate how the by now quite extensive catalogues of sequences of small RNAs, tRNA and 5 S and 5.8 S rRNA as well as properties of RNA polymerases and selected ribosomal proteins aid the classification of the interesting group of meta- or archae-bacteria in relation to eubacteria and eukaryotes.

In the sections on genetics and structure of RNA polymerase, tRNA, and ribosomes ~70% of the papers deal with *Escherichia coli* and because of the extensive studies of this organism for many years, *E. coli* will for a long time be *the* reference system. This being the case it is perhaps unfortunate that most of the *E. coli* papers are highly specialized research reports and, however well some of them are written, readers not familiar with the topics will not have an easy time. In addition, discussions of the papers are not recorded in the book and cross-references are scarce.

Books of Proceedings with their relatively long publication time are often overtaken by more recent reports in the regular journals. One justification for publishing Proceedings – aside from providing the meeting participants with a souvenir – is to bring together related areas of research that are normally treated separately. In this respect the book has the right ingredients for being useful and interesting, but the specialized nature of most papers will soon make it out of date.

Kirsten Gausing